

ADD Rec'd 12/7/90

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**FEDERAL EXPRESS**

The Common Carrier Bureau  
Federal Communications Commission - 2000 L  
Washington, D. C. 20554

Re: TCA Management Co., et al. v. Southwestern Public Service Company, No. 90-002

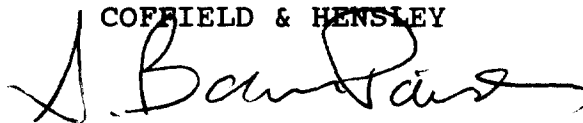
Gentlemen:

Enclosed is the Response to Complaint in the above-referenced cause.

If there are any questions, please feel free to call.

Sincerely,

HINKLE, COX, EATON,  
COFFIELD & HENSLEY



S. Barry Paisner

SBP:jrr  
Enclosure

December 6, 1990  
DOCKET FILE COPY ORIGINAL  
RECEIVED  
JUN 15 1995  
FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY  
cc 95-84

BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D. C. 20554

RECEIVED

JUN 15 1995

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

CC 95-84

In the Matter of

TCA MANAGEMENT CO.; TELESERVICE  
CORPORATION OF AMERICA; and TCA  
CABLE OF AMARILLO, INC.,

Complainants,

vs.

File No. 90-002

SOUTHWESTERN PUBLIC SERVICE COMPANY,

Respondent.

RESPONSE TO COMPLAINT

HINKLE, COX, EATON,  
COFFIELD & HENSLEY

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### Attachments

Affidavit of Harold Daniel Reed.....	Exhibit "A"
Selected NESC Code Sections.....	Exhibit "B"
NESC Interpretations 1984-1987.....	Exhibit "C"

BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of

TCA MANAGEMENT CO.; TELESERVICE  
CORPORATION OF AMERICA; and TCA  
CABLE OF AMARILLO, INC.,

Complainants,

vs.

File No. 90-002

SOUTHWESTERN PUBLIC SERVICE COMPANY,

Respondent.

TO: Chief, Common Carrier Bureau

**RESPONSE TO COMPLAINT**

Southwestern Public Service Company ("SPS"), for its response to the Complaint filed by TCA Management Co., et al. ("TCA") states:

**I. Answer to Specific Allegations.**

1. SPS admits paragraphs 1, 2, 3, 5 and 7.
2. SPS denies paragraphs 6, 8, 9 and 10.
3. In answering paragraph 4, SPS states that its utility poles are used for the purpose of transmitting electricity and that the complainants attach cable on the poles for the purpose of wire communication. SPS admits the remaining allegations of paragraph 4.

4. In answering paragraph 11, SPS states that the rates charged TCA are below the maximum rates allowed by 47 U.S.C. § 224 and that TCA is not entitled to an adjustment of the rates or a refund.

**II. TCA Has Failed to Meet Its Burden Pursuant to 47 C.F.R. § 1.1404 and the Complaint Must Be Dismissed.**

5. Complainants have failed to comply with the requirement of 47 C.F.R. § 1.1404 in that:

a. Complainants failed to serve the New Mexico Public Utility Commission, the Oklahoma Corporation Commission and the Kansas Corporation Commission, each of which regulates service by Southwestern.

b. Complainants have not specified all information and argument to justify the claim that the complained-of terms are unjust and unreasonable.

c. The total number of poles subject to the agreement is not accurately accounted for in the Complaint.

d. The contracts complained of are products of arms length agreements and therefore are not unjust or unreasonable.

**III. Justification of Rate.**

**A. Space Allocated to TCA.**

6. SPS denies that TCA should only be allocated one foot of useable space and submits that the following demonstrates

that TCA should be allocated 42 inches and thus rebuts this presumption.

7. a. SPS is required to maintain a 40-inch safety space by the National Electric Safety Code's ("NESC") 1990 standards.

b. The cable company must be assessed the entire 40" of safety space. As stated in Senate Report 95-580, "the allocation formula provides that a cable system may bear a proportionate share of the pole cost in exactly the same proportion that its attachment and attendant clearances take up useable space. (Emphasis added). Id. at 20. When discussing the space assigned to the cable company, the legislative history states that the basis for the one-foot calculation is the assumption that one inch is actually occupied by the TCA conductor and 11 inches is safety space. The Senate Report states "the clearance space between CATV and the next adjacent pole user is attributed to CATV." Id. The clear intent of the legislature in passing 47 U.S.C. § 224 was that the cable company pay for the prorata cost of space its attachments occupied, as well as attendant clearances, including the safety space required by the NESC.

c. This administrative tribunal has taken a single example found in the legislative history, that CATV has been as a matter of practice allocated one foot of useable space, and effectively created an irrebuttable presumption that is arbitrary and capricious and ignores the true intent of the pole attachment

act, which is, that the CATV operator pay for its share of space actually occupied including clearance space.

d. The 1990 NESC Code has increased the burden on utilities with regard to safety space. The 1990 Code now requires that the utility calculate the actual sag of the conductor under the worst case conditions. Paragraph 235(c)(2)(b)(1a) of the NESC Code as amended requires the safety clearance must be maintained under the three following worst case conditions:

- i. 120° (50°C), no wind displacement.
- ii. The maximum conductor temperature for which the line is designed to operate, if greater than 120°F (50°C), with no wind displacement.
- iii. 30°F (0°C), no wind displacement, with radial thickness of ice, if any, specified in Rule 250 B for the loading district concerned.

The practical effect of the new requirement is that the conductor sag calculation is greater due to the weight of ice or the heat expansion of the steel component of the conductor. SPS must now attach to the pole at a higher level in order to compensate for the de-facto increase in the mid-line sag and the mid-line safety space. This requirement creates a decrease in the total useable space on the attendant pole, and increases SPS's financial burden in carrying TCA's cable.

e. The presence of TCA's cable makes the safety space an issue. If the cable company were not attaching cable to SPS poles, there would be no need to comply with the pole safety space or the mid-line safety space. The amended NESC standards have increased the pole safety space by requiring the worst case

calculation regarding the safety space between SPS lines and TCA lines at mid-span. This space is solely for the safety of CATV linemen. SPS linemen do not require this space for their safety. Accordingly, TCA should be assessed the entire allocation of 40 inches for the safety space. (See Affidavit of Harold D. Reed, attached as Exhibit "A"; the applicable NESC Code sections are attached as Exhibit "B").

8. The only beneficiary of the safety space is TCA. The 40" safety space is solely for the safety of cable television workers. In the NESC Interpretations 1984-1987 (attached as Exhibit "C") it is stated that the 40" safety space is "vital to the safety of communication line workers to provide adequate head room for their work." (Emphasis added). Id. at 121.

9. SPS is absolutely restricted by NESC § 232 B 4(a) from attaching anything on the pole within 20" of TCA's cables. SPS does not, as a matter of policy, use the safety space on any of its poles as "resourceful use" and if the TCA cable is closer than 40" to any SPS conductor or luminaries, it is because TCA has encroached on the safety space in disregard of the NESC clearance requirements or TCA's contractual obligations to SPS. It would be arbitrary agency action to assess a resourceful use on SPS which is not in fact used. The 40-inch safety space (3.33 feet) must be calculated as space occupied by the cable company as clearances. See Exhibit "A".

10. SPS disagrees with the findings in the Second Report and Order, 72 FCC.2d 59 (1979) that the CATV company is solely



responsible for the replacement pole costs which the safety space may cause. In SPS' system, the majority of the maintenance costs of the safety space is solely allocated to SPS. When a pole is replaced for purposes of adding a taller pole to accommodate a communication cable, TCA is charged an incremental cost. However, rather than replacing a pole, SPS often installs an additional pole to decrease the mid-span sag and therefore adjusts the minimum ground clearance attachment for TCA cable. This intermediate mid-span pole is installed and used solely for TCA purposes, but SPS is still allocated 12.5 feet of useable space on the pole regardless of the fact that if it weren't for the TCA need, the pole would not be installed. Furthermore, if a pole is replaced on which is located a cable attachment for any reason other than to add useable space for cable, SPS absorbs all of these costs. Since these costs are capitalized, they are not reflected in operation and expenses charged as part of the TCA rate. These costs are "hard to quantify" costs but should be recognized by the FCC as tangible expenses that are incurred by SPS in maintaining the safety space on the utility pole. This being the case on SPS' system, it follows that it would be clearly erroneous to hold that TCA bears the burden of maintaining the safety space. See Exhibit "A".

11. The TCA cable bracket and bolt occupies two inches on the pole, not one inch as held by the FCC in the Second Report and Order, 72 FCC.2d 59 (1979). See Exhibit "A".

12. SPS calculates the space occupied by TCA as two inches for cable and bracket plus 40 inches allocated to TCA as attendant clearance for a total of 42 inches (3.5 feet).

13. The above stated facts rebut the presumption that TCA should only be assessed one foot of space on the pole. The facts of this case and the fact that the NESC Code has been amended numerous times since 1980, distinguish this case from Monongahela Power Co. v. FCC, 655 F.2d 1254 (D.C. Cir. 1981). If the FCC disregards these facts in favor of its regulatory presumption, it then is creating an unconstitutional irrebuttable presumption which violates SPS' due process rights under the Fifth Amendment of the Constitution. Vlaadis v. Kline, 412 U.S. 441, 446 (1973); Cleveland Board of Education v. LaFleur, 414 U.S. 632, 644 (1973).

**B. Useable Space.**

14. TCA, in its Complaint, adopts the 13.5 useable space presumption contained in 47 CFR § 1.1404(g)(11). SPS accepts this regulatory presumption.

**C. Calculation of Rate**

**1. Cost of a Bare Pole**

SPS calculates the cost of the bare pole, including the cost of guy wires and anchors. Alabama Power Co. v. F.C.C., 773 F.2d 362 (D.C. Cir. 1985). The costs of right-of-ways is also included in the calculation which TCA omitted from its calculations. Texas Power and Light v. F.C.C., 784 F.2d 1265 (5th Cir. 1986).

SPS calculates the cost of the bare pole as follows:

Gross Pole Investment	\$ 77,944,347
Accum. Depreciation - Plant	130,370,332
Alloc. Fact - % Account 364/Dis. Plant	0.19969
Accum. Depreciation - Poles	\$ 26,034,183

#### ACCUM. DEF. INCOME TAX - PLANT

Account 281	0
Account 282	214,934,892
Account 283	8,752,885
Account 190	<u>-13,341,814</u>
	210,345,963

Gross Plant	1,947,101,352
Alloc. Accum. Def. Tax/Gross Plant	0.108030
Accum. Def. Tax - Poles	\$ 8,420,352

RIGHT OF WAY (Acct 360 * 60%)	\$ 1,395,724
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TOTAL NUMBER OF POLES	394,962
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NET COST OF BARE POLE	\$ 97.13
-----------------------	----------

.85 (77,944,347 - 26,034,183 - 8,420,352) + 1,395,724 = \$97.13  
394,962

## 2. Depreciation Expenses

SPS calculates the depreciation expense as follows:

Dep. Rate - Distribution	0.02846
Gross Pole Investment	77,944,347
Net Pole Investment	43,489,812
DEPRECIATION EXPENSE - DISTRIBUTION	5.10%

## 3. Maintenance Expense

SPS maintenance and operating expenses calculations include accounts 580, 583, 588, 590 and 593 in maintenance of overhead lines. These accounts reflect actual maintenance expense incurred because of the presence of TCA cable and TCA should be allocated its prorata share. Accounts 580, 588 and 590 are all allocated based on investment in poles, overhead conductors and

services (accounts 364, 365, 369) by Distribution Plant. We have adjusted account 369 which includes underground and overground services to reflect only the cost of overhead services. Thus the adjusted formula for maintenance expenses is:

$$\begin{array}{l} \text{Maintenance} = \frac{\text{Investment in} \quad \text{A/C 580 + 583 + 588 + 590 + 593}}{\text{Expenses A/C 364 + 365 + 369} \quad \text{A/CS 364 + 365 + 369 - Accumulated Deferred Income Taxes Related to A/CS 364 + 365 + 369}} \end{array}$$

SPS calculates its maintenance expense as follows:

Maintenance of Overhead Lines \$6,135,127  
 (Acct 580, 583, 588, 590, 593)  
 Accts 580, 588, 590 are allocated on Invest/Dist Plant  
 $((501,492 + 1,870,105 + 475,082) * (165,965,290 / 390,318,780)) + 1,560,402 + 3,364,304 = 6,135,127$

Investment in:

Account 364 - Poles, Towers, Fixtures	77,944,347
Account 365 - Overhead Conductors	68,017,827
Account 369 - Services	<u>20,003,116</u>
<b>TOTAL</b>	<b>\$165,965,290</b>

Allocation Factors

(Acct./Dist. Plant)	\$390,318,780
Account 364 - Poles, Towers, Fixtures	0.19969
Account 365 - Overhead Conductors	0.17426
Account 369 - Services	0.05125

Depreciation in:

Account 364 - Poles, Towers, Fixtures	\$26,034,183
Account 365 - Overhead Conductors	22,718,627
Account 369 - Services	<u>6,681,239</u>
	<b>\$55,434,048</b>

Accum. Deferred Tax in:

Account 364 - Poles, Towers, Fixtures	\$8,420,352
Account 365 - Overhead Conductors	7,347,987
Account 369 - Services	<u>2,160,943</u>
	<b>\$17,929,282</b>

OPERATION AND MAINTENANCE EXPENSE 6.63%  
 (6,135,127/(165,965,290 -55,434,048 -17,929,282))

**4. Administrative and General Expense**

SPS calculates administrative and general expenditures as follows:

Admin. & General	\$ 35,960,497
Gross Plant	1,947,101,352
Accum. Depr.-Total Plant	567,979,550
Accum. Deferred Tax-Total Plant	210,345,963
 TOTAL ADMIN. & GEN. EXPENSE	 3.08%
(35,960,497/(1,947,101,352 - 567,979,550 - 210,345,983))	

**5. Normalized Tax Expense**

Normalized tax expense have been used in calculating this aspect of capital costs pursuant to the holding in Texas Power and Light v. FCC, 784 F.2d 1265 (5th Cir. 1986). SPS calculates normalized tax expense as follows:

Acct. 408.1 Taxes Other Than Income	25,503,075
Acct. 409.1 Income Tax-Fed.	42,545,831
Acct. 409.1 Income Tax-Other	1,626,747
Acct. 410.1 Prov. for Deferred Tax	26,579,921
Acct. 411.4 ITC Credit Adjust.	-612,369
Acct. 411.1 Prov. for Deferred Tax	<u>-15,029,240</u>
	\$80,613,965
 NORMALIZED TAX EXPENSE	 6.90%
(80,613,965/(1,947,101,352 - 567,979,550 - 210,345,983))	

**6. SPS' Return on Investment 11.70%**

**7. Revenue Requirement Per Pole**

SPS calculates the revenue requirement per pole as follows:

DEPRECIATION EXPENSE	5.10%
OPERATION AND MAINTENANCE EXPENSE	6.63%
ADMINISTRATION AND GENERAL EXPENSE	3.08%
NORMALIZED TAXES	6.90%
RETURN ON INVESTMENT	<u>11.70%</u>
 TOTAL REVENUE REQUIREMENT	 33.400057%

#### IV. Final Calculation of the Rate.

Computation of rate using the figures set forth in this Response demonstrates that the maximum rate allowed pursuant to 47 USC § 224 and the regulations promulgated thereunder is calculated as follows:

$$\begin{aligned}
 \text{Maximum Rate} &= \text{Total useable space} \times \\
 &\quad (\text{net bare pole costs} \times \text{carrying charges}) \\
 \text{Maximum Rate} &= (97.13 \times (3.5/13.5) \times .33400057) \\
 &= \$8.41 \text{ annual rate per pole}
 \end{aligned}$$

#### V. Summary of Filing.

SPS' charges to TCA are reasonable and well below the maximum rate allowed pursuant to 24 U.S.C. § 224. SPS has demonstrated that the safety space of 40" should be allocated to TCA. The safety space is not used by SPS. Furthermore, the only beneficiary of the safety space is TCA. Yet, TCA does not bear the burden of maintaining the safety space. SPS capitalizes costs that are in fact maintenance, cost due to the safety space. The NESC 1990 requirements regarding mid-span sag require that the FCC reconsider its past decisions on safety space issues in light of the fact that the NESC requirements cause SPS to increase the safety space on the pole to accommodate the mid-line sag safety space between the TCA cable and SPS conductors. It is the presence

of TCA's cable that requires safety space to be included on the pole. TCA should have the entire 40" safety space allocated to its portion of useable space. The FCC's previous holdings that disregard the effect of mid-line sag on actual useable space must be reevaluated in light of the new NESC standards.

The presumption of one foot of useable space allocated to cable operators has been rebutted in this case, and based on the facts presented, TCA must be allocated 42 inches of useable space.

In calculating maintenance expense, SPS has included TCA's prorata share of those accounts affected by the presence of TCA's cable. SPS has also included the cost of right of way in the cost of a bare pole.

Based on the facts and arguments presented in this response, SPS charges TCA a reasonable rate pursuant to 47 U.S.C. § 224 and TCA's Complaint should be dismissed with prejudice.

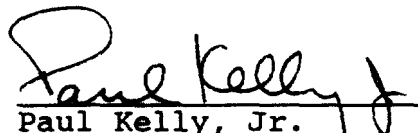
**VI. Request for Hearing**

SPS respectfully requests that this matter be set for hearing and that evidence be taken on all contested issues.

Respectfully submitted,

HINKLE, COX, EATON,  
COFFIELD & HENSLEY

By

  
Paul Kelly, Jr.  
S. Barry Paisner  
Post Office Box 2068  
Santa Fe, New Mexico 87504-2068  
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Attorneys for Southwestern Public  
Service Company

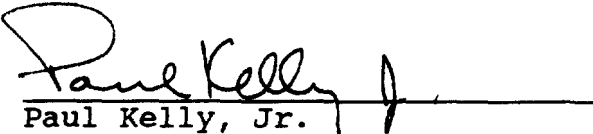
Certificate of Service

I hereby certify that I caused a true and correct copy of the foregoing Response to Complaint to be mailed by first-class mail, postage prepaid, to the following counsel of record this 27 day of December, 1990:

Paul Glist, Esq.  
Cole, Raywid & Braverman  
1919 Pennsylvania Avenue, N.W.  
Washington, D.C. 20006

Federal Energy Regulatory Commission  
825 N. Capitol St., N.E.  
Washington, D.C. 20426

Public Utility Commission of Texas  
7800 Shoal Creek Blvd.  
Suite 400N  
Austin, Texas 78757

  
Paul Kelly, Jr.



**VERIFICATION**

STATE OF TEXAS           )  
                                  ) ss.  
COUNTY OF POTTER       )

I, Gerald J. Diller, Manager of Rates and Regulations of Southwestern Public Service Company, Amarillo, Texas, state that I have read the foregoing copy of the Response; that I am generally familiar with the matters contained therein and with the factual allegations set forth therein; and that the factual allegations therein are true and correct to the best of my knowledge, information and belief.

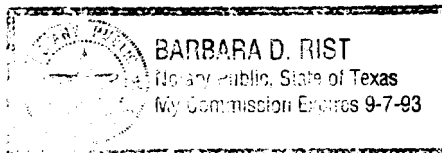
Gerald J. Diller  
Gerald J. Diller

SUBSCRIBED AND SWORN TO BEFORE ME this 5<sup>th</sup> day of Dec., 1990.

Barbara D. Rist  
Notary Public in and for the  
State of Texas

My Commission Expires:

9/7/93



**AFFIDAVIT OF HAROLD DANIEL REED**

STATE OF TEXAS           )  
                                  )  
COUNTY OF POTTER       )

Harold Daniel Reed, being duly sworn deposes and states:

1. My name is Harold Daniel Reed. I am Principle Engineer of Distribution for Southwestern Public Service Company ("SPS"). I am a Registered Professional Engineer in the State of Texas, over twenty-one years of age, of sound mind, have professional and personal knowledge of the facts pertaining to the matters set forth herein, and I do hereby swear that all of said facts and statements herein contained are true and correct.

2. SPS's policy is to maintain a 40" minimum clearance between SPS's electric conductors and the television cable, as required by the National Electric Safety Code (NESC). The purpose for this separation is for the safety of cable television personnel. The NESC prohibits installation of street light brackets closer than 20" from the television cable.

In the vast majority of the cases where SPS's equipment is within the 40-inch safety space it is because the cable television operator has attached its cable in violation of its contractual obligations with SPS. SPS absolutely prohibits any attachments within 20 inches of any equipment in compliance with NESC standards.

**EXHIBIT "A"**

3. Without the cable, SPS would be required by the NESC to maintain a 16'6" minimum clearance over roads, streets and alleys for SPS's secondary conductors. With the addition of the cable, the electric conductor sag requirements as prescribed by the NESC are that a minimum mid-span clearance of 30" must be maintained from the television cable. This sag is measured under the following conditions:

- (1) 120°F (50°C), no wind displacement.
- (2) The maximum conductor temperature for which the line is designed to operate, if greater than 120°F (50°C), with no wind displacement.
- (3) 32°F (0°C), no wind displacement, with radial thickness of ice, if any, specified in Rule 250B for the loading district concerned.

Again, this clearance is for the safety of cable television personnel.

4. Using the 1' sag per 100' span length criteria used by TCA for the television cable and the standard joint use mounting height given in DS-4-7 (Attached as Exhibit "1" to this affidavit), SPS must maintain a minimum ground clearance of:

100' Span 17'0" + 30' = 19'6" over alleys

150' Span 16'6" + 30" = 19' over alleys

100' Span 20'0" + 30" = 22'6" over streets

150' Span 19'6" + 30" = 22' over streets

5. The NESC requires that these span clearances must be maintained by increasing the mounting height at the pole. SPS,

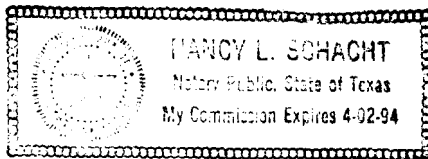
therefore, must attach to the pole 30" to 72" higher to accommodate a television cable, a requirement directly related to the changes in the NESC since 1977.

6. SPS's long span construction designs as used for urban street feeder lines and for rural lines are not designed to accommodate cables. To accommodate television cable on long span lines, SPS must install taller poles, with a greater than 40" separation between SPS's nearest conductor and the television cable at the pole in order to maintain the 30" mid-span safety clearance. An alternative is to install additional poles to shorten the span. In this case, there is no usable space for SPS because the poles have no purpose for electrical transmission. Where SPS accommodates cable on long span construction, incremental charges related to longer poles or additional poles are made to the cable company at the time of initial line construction and use. However, replacement of these poles and additional crossarms caused for any reason, e.g., accident, storms or age deterioration, is done at no cost to the cable company by SPS, even though the extra length or additional pole and crossarm increments are additional cost with no value to SPS. Those replacement costs are capitalized and are not reflected in operation and maintenance expenses charged under the rate to the cable company. Administrative costs of tracking expenses would be excessive in relation to the total amount of expense. The attachment rates should reflect these incremental costs.

7. The TCA bolt, bracket, washer and cable actually occupy two inches on a utility pole.

Harold Daniel Reed  
Harold Daniel Reed

SUBSCRIBED AND SWORN TO before me this 5<sup>th</sup> day of December, 1990, by Harold Daniel Reed.



Nancy L. Schacht  
Notary Public, State of Texas  
My Commission Expires: 4-2-94

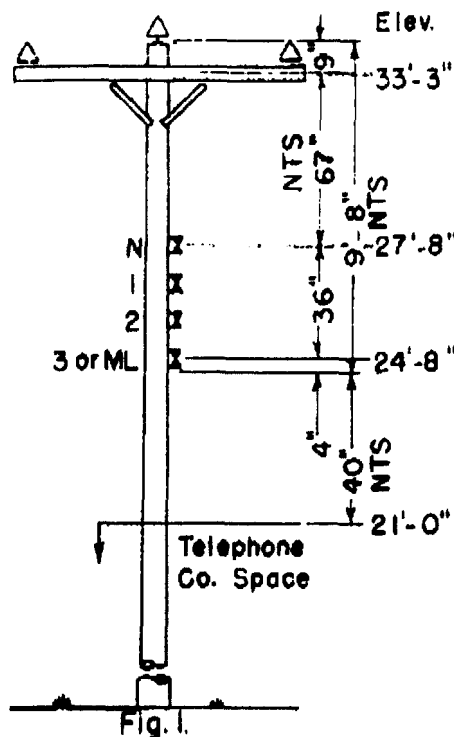


Fig. 1.  
40'-Cl. 4 Street Crossing Pole

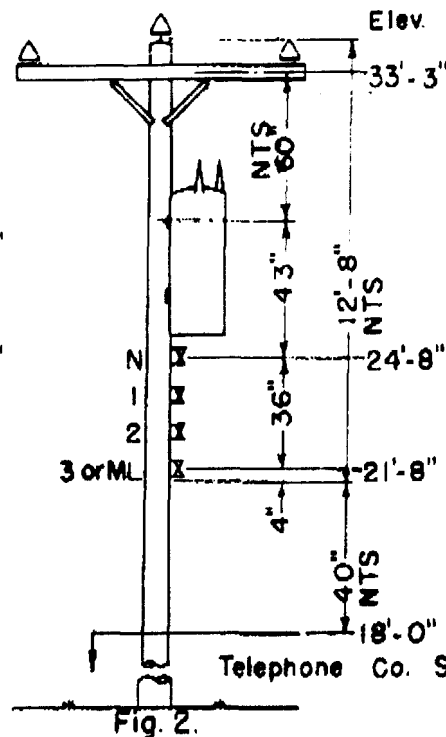


Fig. 2.  
40'-Cl. 4 Transformer Pole

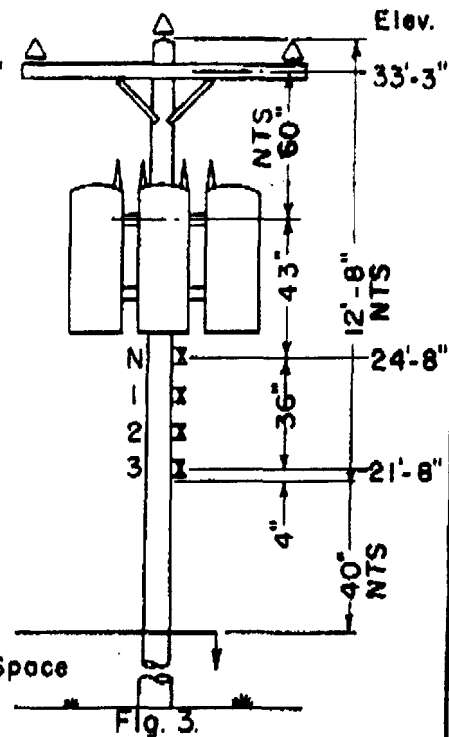


Fig. 3.  
40'-Cl. 4 Transformer Pole

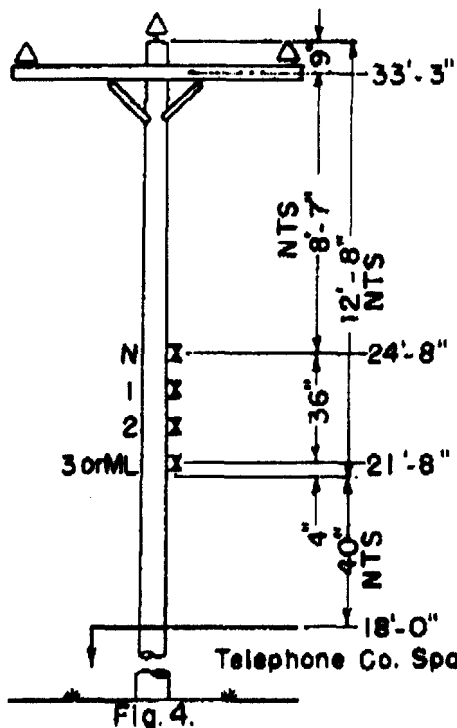


Fig. 4.  
40'-Cl. 4 Alley Pole

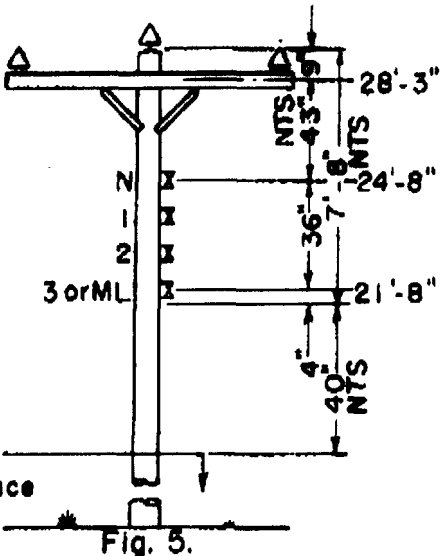


Fig. 5.  
35'-Cl. 5 Alley Pole

NOTE: If taller poles are required, 45' poles should be Class 4, and 50' poles should be Class 3.

REVISIONS 5. Lowered transformers, changed 5 secondaries to 4. (P&T Jan.) 7/21/59. *PPM/C*

## ELEVATION OF EQUIPMENT ON URBAN JOINT-USE POLES

Southwestern PUBLIC SERVICE Company

DRAWN	DATE	CHECKED	APPROVED	SCALE	SYSTEM ENGINEERING DEPT.	REV.
ELH/WRS	5/11/53	<i>PPM/C</i>	<i>h. C. Nelson</i>	3/16"=1'-0"	NO. DS-4-7	5

EXHIBIT "1"

must be resolved in a manner consistent with the prevailing limitations and conditions.

4. Where a governmental authority exercising jurisdiction over structure location has issued a permit for, or otherwise approved, specific locations for supporting structures, that permit or approval shall govern.

### C. From Railroad Tracks

Where railroad tracks are parallel or crossed by overhead lines, all portions of the supporting structures, support arms, anchor guys, and equipment attached thereto less than 22 ft (6.7 m) above the nearest track rail shall be located not less than 12 ft (3.6 m) from the nearest track rail. See Rule 234I.

**EXCEPTION 1:** A clearance of not less than 7 ft (2.13 m) may be allowed where the supporting structure is not the controlling obstruction, provided sufficient space for a driveway is left where cars are loaded or unloaded.

**EXCEPTION 2:** Supports for overhead trolley contact conductors may be located as near their own track rail as conditions require. If very close, however, permanent screens on cars will be necessary to protect passengers.

**EXCEPTION 3:** Where necessary to provide safe operating conditions which require an uninterrupted view of signals, signs, etc along tracks, the parties concerned shall cooperate in locating structures to provide the necessary clearance.

**EXCEPTION 4:** At industrial sidings, a clearance of not less than 7 ft (2.13 m) shall be permitted, provided sufficient space is left where cars can be loaded or unloaded.

## 32. Vertical Clearances of Wires, Conductors, Cables, and Equipment Above Ground, Roadway, Rail, or Water Surfaces

### A. Application

The vertical clearances specified in Rule 232B1 apply under the following conductor temperature and loading conditions, whichever produces the largest final sag.

1. 120 °F (50 °C), no wind displacement.
2. The maximum conductor temperature for which the line is designed to operate, if greater than 120 °F (50 °C), with no wind displacement.
3. 32 °F (0 °C), no wind displacement, with radial thickness of ice, if any, specified in Rule 250B for the loading district concerned.

**EXCEPTION:** The conductor temperature and loading condition for trolley and electrified railroad contact conductors shall be 60 °F (15 °C), no wind displacement, final unloaded sag, or initial unloaded sag in cases where these facilities are maintained approximately at initial unloaded sags.

**NOTE:** The phase and neutral conductors of a supply line are normally considered separately when determining the sag of each due to temperature rise.

### B. Clearance of Wires, Conductors, Cables, and Equipment Mounted on Supporting Structures

#### 1. Clearance to Wires, Conductors, and Cables

The vertical clearance of wires, conductors, and cables above ground in generally accessible places, roadway, rail, or water surfaces, shall be not less than that shown in Table 232-1.

#### 2. Clearance to Unguarded Rigid Live Parts of Equipment

The vertical clearance above ground or roadway surfaces for unguarded rigid live parts such as potheads, transformer bushings, surge arresters, and short lengths of supply conductors connected thereto, which are not subject to variation in sag, shall be not less than that shown in Table 232-2.

#### 3. Clearance to Equipment Cases

The vertical clearance of equipment cases above ground or roadway surfaces shall be not less than that shown in Table 232-2.

#### 4. Street and Area Lighting

- a. All exposed ungrounded conductive parts of luminaires and their supports that are not insulated from current-carrying parts shall be maintained at not less than 20 in (500 mm) from the surface of their supporting structure.

**EXCEPTION 1:** This may be reduced to 5 in (125 mm) if located on the side of the structure opposite the designated climbing space.

**EXCEPTION 2:** This does not apply where the equipment is located at the top or other vertical portion of the structure that is not subject to climbing.

- b. Insulators, as specified in Rule 279A, should be inserted at least 8 ft (2.45 m) from the ground in metallic suspension ropes or chains supporting lighting units of series circuits.

**Table 232-1 Vertical Clearance of Wires, Conductors, and Cables  
Above Ground, Roadway, Rail, or Water Surfaces**

(Voltages are phase-to-ground for effectively grounded circuits and those other circuits where all ground faults are cleared by promptly de-energizing the faulted section, both initially and following subsequent breaker operations. See the definition section for voltages of other systems.) **FT**

Nature of surface underneath wires, conductors, or cables	① Insulated communication conductors and cable; messengers; surge protection wires; grounded guys; neutral conductors meeting Rule 230E1; supply cables meeting Rule 230C1 (ft)	Non-insulated communication conductors; supply cables of 0 to 750 V meeting Rules 230C2 or 230C3 (ft)	Supply cables over 750 V meeting Rules 230C2 or 230C3; open supply conductors, 0 to 750 V (ft)	Open supply conductors, over 750 V to 22 kV (ft)	Trolley and electrified railroad contact conductors and associated span or messenger wires ① 0 to 750 V to ground (ft)	over 750 V to 22 kV to ground (ft)
	Where wires, conductors, or cables cross over or overhang					
1. Track rails of railroads (except electrified railroads using overhead trolley conductors) ② ③ ④	23.5	24.0	24.5	26.5	22.0 ④	22.0 ④
2. Roads, streets, alleys; nonresidential driveways, parking lots, and other areas subject to truck traffic ⑤	15.5 ③	16.0 ③	16.5	18.5	18.0 ⑤	20.0 ⑤
3. Residential driveways	15.5 ⑦ ③	16.0 ⑦ ③	16.5 ⑦	18.5	18.0 ⑤	20.0 ⑤
4. Other land traversed by vehicles, such as cultivated, grazing, forest, orchard, etc	15.5	16.0	16.5	18.5	-	-
5. Spans and ways subject to pedestrians or restricted traffic only ⑥	less 9.5	12.0 ⑥	12.5 ⑥	14.5	16.0	18.0

6. Water areas not suitable for sailboating or where sailboating is prohibited ③	14.0	14.5	15.0	17.0	-	-
7. Water areas suitable for sailboating (including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with an unobstructed surface area of: ⑦ ⑧ ⑨)						
(a) Less than 20 acres	17.5	18.0	18.5	20.5	-	-
(b) 20 to 200 acres	25.5	26.0	26.5	28.5	-	-
(c) Over 200 to 2000 acres	31.5	32.0	32.5	34.5	-	-
(d) Over 2000 acres	37.5	38.0	38.5	40.5	-	-
8. Public or private land and water areas suited for rigging or launching sailboats	Clearance above ground shall be 5 ft greater than in 7 above, for the type of water areas served by the launching site					

Where wires, conductors, or cables run along and within the limits of highways or other road rights-of-way but do not overhang the roadway						
9. Roads, streets, or alleys	15.5 ③ ④	16.0 ③	16.5	18.5	18.0 ⑤	20.0 ⑤
10. Roads to rural districts where it is unlikely that vehicles will be crossing under the line	12.5 ③ ④	14.0 ③	14.5 ③	16.5	18.0 ⑤	20.0 ⑤

① Where subways, tunnels, or bridges require it, less clearances above ground or rails than required by Table 232-1 may be used locally. The trolley and electrified railroad contact conductor should be graded very gradually from the regular construction down to the reduced elevation.

② For wire, conductors, or cables crossing over mine, logging, and similar railways which handle only cars lower than standard freight cars, the clearance may be reduced by an amount equal to the difference in height between the highest loaded car handled and

22 ft, but the clearances shall not be reduced below that required for street crossings.

③ This footnote not used in this edition.

④ In communities where 21 ft has been established, this clearance may be continued if carefully maintained. The elevation of the contact conductor should be the same in the crossing and next adjacent spans. (See Rule 225D2 for conditions which must be met where uniform height above rail is impractical.)

⑤ In communities where 16 ft has been established for trolley and



electrified railroad contact conductors 0 to 750 V to ground, or 18 ft for trolley and electrified railroad contact conductors exceeding 750 V, or where local conditions make it impractical to obtain the clearance given in the table, these reduced clearances may be used if carefully maintained.

④ This footnote not used in this edition.

⑦ Where the height of attachment to a building or other installation does not permit service drops to meet these values, the clearances may be reduced to the following:

	(feet)
(a) Insulated supply service drops limited to 300 V to ground	12.5
(b) Insulated drip loops of supply service drops limited to 300 V to ground	10.5
(c) Supply service drops limited to 150 V to ground and meeting Rules 230C1 or 230C3	12.0
(d) Drip loops only of service drops limited to 150 V to ground and meeting Rules 230C1 or 230C3	10.0
(e) Insulated communication service drops.	11.5

⑧ Where the height of attachment to a building or other installation does not permit service drops to meet these values, the clearances may be reduced to the following:

	(feet)
(a) Insulated supply service drops limited to 300 V to ground	10.5
(b) Insulated drip loops of supply service drops limited to 300 V to ground	10.5
(c) Supply service drops limited to 150 V to ground and meeting Rules 230C1 or 230C3	10.0
(d) Drip loops only of supply service drops limited to 150 V to ground and meeting Rules 230C1 or 230C3.	10.0

⑨ Spaces and ways subject to pedestrians or restricted traffic only are those areas where equestrians, vehicles, or other mobile units, exceeding 6 ft in height, are prohibited by regulation or permanent terrain configurations or are otherwise not normally encountered

or not reasonably anticipated.

⑩ Where a supply or communication line along a road is located relative to fences, ditches, embankments, etc., so that the ground under the line would not be expected to be travelled by pedestrians, this clearance may be reduced to the following values:

	(feet)
(a) Insulated communication conductor and communication cables	9.5
(b) Conductors of other communication circuits	9.5
(c) Supply cables of any voltage meeting Rule 230C1 and supply cables limited to 150 V to ground meeting Rules 230C2 or 230C3	9.5
(d) Insulated supply conductors limited to 300 V to ground	12.5
(e) Guys	9.5

⑪ No clearance from ground is required for anchor guys not crossing tracks, rails, streets, driveways, roads, or pathways.

⑫ This clearance may be reduced to 13 ft for communication conductors and guys.

⑬ Where this construction crosses over or runs along alleys, driveways, or parking lots, this clearance may be reduced to 15 ft.

⑭ This footnote not used in this edition.

⑮ This footnote not used in this edition.

⑯ Adjacent to tunnels and overhead bridges which restrict the height of loaded rail cars to less than 22 ft, these clearances may be reduced by the difference between the highest loaded rail car handled and 22 ft, if mutually agreed to by the parties at interest.

⑰ For controlled impoundments, the surface area and corresponding clearances shall be based upon the design high water level. For other waters, the surface area shall be that enclosed by its annual high water mark, and clearances shall be based on the

normal flood level. The clearance over rivers, streams, and canals shall be based upon the largest surface area of any 1 mi long segment which includes the crossing. The clearance over a canal, river, or stream normally used to provide access for sailboats to a larger body of water shall be the same as that required for the larger body of water.

⑱ Where an overwater obstruction restricts vessel height to less than the applicable reference height given in Table 233-3, the required clearance may be reduced by the difference between the reference height and the overwater obstruction height, except that the reduced clearance shall be not less than that required for the surface area on the line-crossing side of the obstruction.

⑲ Where the US Army Corps of Engineers, or the State, or surrogate thereof has issued a crossing permit, clearances of that permit shall govern.

⑳ See Rule 234I for the required horizontal and diagonal clearances to rail cars.

㉑ For the purpose of this rule, trucks are defined as any vehicle exceeding 8 ft in height. Areas not subject to truck traffic are areas where truck traffic is not normally encountered or not reasonably anticipated.

㉒ This footnote not used in this edition.

㉓ This footnote not used in this edition.

㉔ Communication cables and conductors may have a clearance of 15 ft where poles are back of curbs or other deterrents to vehicular traffic.